

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
8 March 2001 (08.03.2001)

PCT

(10) International Publication Number  
**WO 01/17254 A1**

(51) International Patent Classification<sup>7</sup>: **H04N 7/173**

(21) International Application Number: PCT/GB00/03323

(22) International Filing Date: 29 August 2000 (29.08.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
9920452.1 27 August 1999 (27.08.1999) GB

(71) Applicant (for all designated States except US): **GEM-STAR DEVELOPMENT LIMITED** [GB/GB]; 14 Blacklands Terrace, London SW3 2SP (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **DRAZIN, Jonathan** [GB/GB]; Gemstar Development Limited, 14 Blacklands Terrace, London SW3 2SP (GB).

(74) Agents: **KINSLER, Maureen, Catherine** et al.; Kilburn & Strode, 20 Red Lion Street, London WC1R 4PJ (GB).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

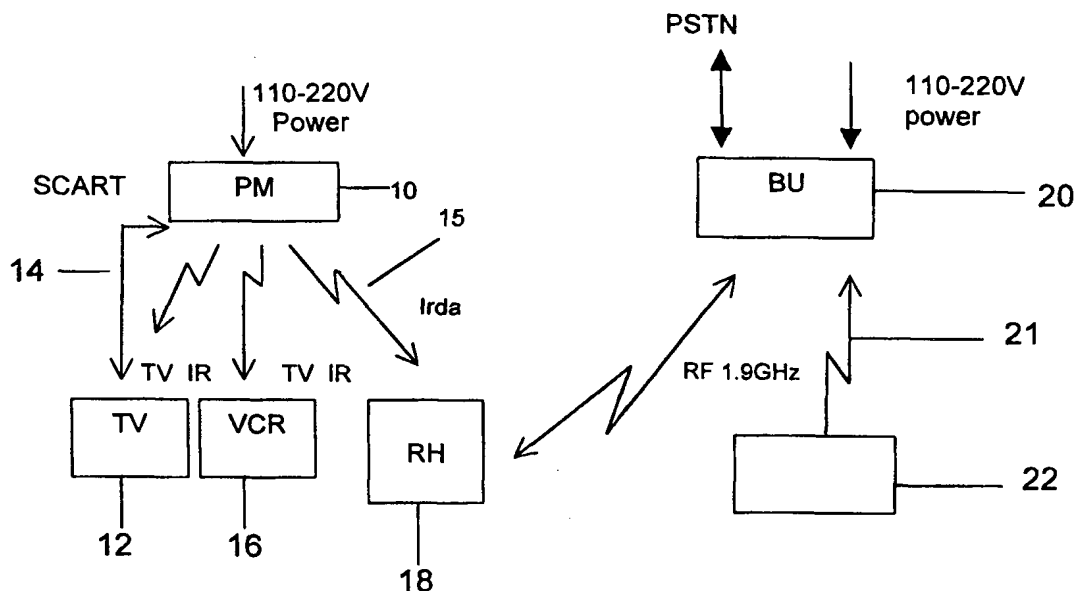
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- With international search report.
- Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: AN INTERACTIVE TELEVISION SYSTEM



(57) Abstract: A system comprising a handset (18) that is operable to establish an audio telephonic link, a display for displaying video signals and controller (10) operable to communicate with the handset (18), the display and the controller (10) being separate from the handset (18). In use, the handset (18) is operable to send a response signal to the controller (10) in reply to a prompt on the display, which prompt is indicative of the availability of further information from a service provider, whereupon on receipt of the response signal, the controller (10) is operable to transmit a control signal to automatically cause an audio telephonic link between the handset (18) and the service provider to be established.

**An Interactive Television System**

The present application relates to an interactive television system. The  
5 application additionally relates to a call management system that uses a display  
screen, typically on a television, and a telephone.

For a number of years, systems that provide interactive and transactional  
electronic services for television viewers have been available. Typically, these  
10 systems comprise set-top-boxes (eg WebTV) and lap-top or keyboard device  
browsers that are plugged into a television in order to display the services and  
additionally a telephone or cable socket in order to establish a communication  
link with a remote service provider. The interactive services that are provided  
can, in some systems, be accessed using electronic programme guides (EPG)  
15 that are incorporated into receiving platforms such as set-top-boxes, video  
recorders or televisions.

EPG systems, such as GuidePlus Gold™ marketed by Gemstar Development  
Corporation in the United States, download TV listing information from  
20 broadcasters and display them interactively according to viewers' individual  
needs. The availability of these systems has greatly improved the ability of  
television viewers to find and record television programs of interest. In most  
cases, viewers interact with the EPG system by keying instructions into a  
handheld, infra-red (IR) remote control unit (IR remote). When EPG systems  
25 support a range of interactive information and transaction services, it is

necessary to provide data communication return paths from viewers to service providers, typically via the public switched telephone network (PSTN).

5 In order to provide a data return path to service providers via the PSTN, a connection is required between the EPG and a telephone socket. Hence, viewers frequently face the inconvenience of having to either install an extension telephone cable or relocate their television set because the TV and telephone are seldom located together in the same room. However, as prices fall, consumers are increasingly buying digital cordless telephones, which  
10 normally comprise a base unit and a portable telephone handset. The base unit is connected to the public switched telephone network (PSTN) via a socket in the telephone user's home and establishes a digital wireless data link with the hand set. Use of such cordless telephones eases the problems associated with the location of the television.

15 Interactive systems that use cordless telephones and televisions are already known. For example, WO 96/13933 discloses an apparatus that combines the functionality of a cordless telephone handset and a remote control unit for appliances such as a television or a video recorder. WO 97/31480 describes a  
20 system in which a two-way communication link is provided between a television and a service provider via a cordless telephone base unit. There is, however, a need to improve these systems to provide an effective, but increasingly simple interface to allow a user to interactively select and use features provided by service providers.

25 In addition, whilst digital cordless telephones offer greater clarity of speech and range than their counterparts, many telephone features, such as a contact

telephone number list, and services, such as call line identification, another party on-line, conference calling, display of account information etc., are difficult to implement because users must memorise multiple key sequences in order to operate them. This is a disadvantage. There is, therefore, a need to  
5 improve the provision of telephone features and services generally and in particular for cordless telephones.

10 An object of the present invention is to provide an interactive television system that improves the functionality of the known systems described above.

Another object of the invention is to provide an interactive call management system that overcomes some of the disadvantages associated with telephones and in particular cordless telephones.

15 Various aspects of the invention are defined in the independent claims. Some preferred features are defined in the dependent claims.

According to one aspect of the present invention, there is provided a system comprising a handset that is operable to establish an audio telephonic link, a  
20 display separate from the handset, a communication link between the handset and the display, and means for presenting an offer of information from a service provider on the display, wherein the handset comprises means for interactively requesting the information offered, whereupon making that request an audio telephonic link is automatically established between the handset and the service  
25 provider.

The means for presenting an offer of information from a service provider on the display may present an advert or cue or icon, which may be part of an EPG or presented simultaneously with a real time broadcast. The advert may be presented as a panel in a portion of the EPG TV display. Users may flag a  
5 logical interest response to such an ad panel by selecting and pressing an appropriate soft action key on the handset (eg "Yes"). Typically, the ad panel is downloaded with the broadcast EPG data. Updated ad-panels or icons may be downloaded separately from the EPG.

10 Ad panels and/or cues and/or icons may be pre-loaded from a broadcast into memory and triggered for display at a particular time or downloaded to the user in a real time broadcast.

15 Preferably, a telephone number is downloaded with the advert panel, which telephone number is dialled automatically when a user requests information, thereby to establish a telephone link between the handset and the service provider.

20 The use of a telephonic advert panel is advantageous because it allows a user to set up automatically a direct telephone voice call to a predefined number. When a telephonic panel is selected, the user may be given the option to make a voice call to a number specified by the advertiser.

25 The display screen may be that of a television or computer or any other appliance.

The communication link between the handset and the display, and the means for presenting an offer of information from a service provider may be provided in a control module that may be a discrete unit or provided in an appliance such as a television or some other television accessory. The control module may include  
5 a cradle that is connected to a power supply and is adapted to receive the handset, so that the handset can be re-charged.

The telephone link may be set up from the control module over a command channel to the remote handset 18, which causes the relevant telephone number  
10 to be dialled.

The handset is preferably a wireless handset. Preferably, the handset has the functionality of a cordless telephone. Preferably, the handset is operable to control the functionality of the display and/or any other appliance that is  
15 connected thereto.

The telephone link may be established over the public switched network (PSTN). The handset may be in communication with a base unit that is connected to the PSTN, preferably wireless communication.  
20

According to another aspect of the present invention, there is provided an interactive call management system comprising a handset that is operable to establish an audio telephonic link, a display separate from the handset, a communication link between the handset and the display, and means for  
25 presenting information relating to telephone services on the display, wherein the handset comprises means for interactively entering requests for information on the screen.

The display may be the screen of a television or computer or any other appliance. The handset is preferably adapted to control the television or other appliance.

5

The means for presenting information may be adapted to present a personal telephone directory or phonebook. A memory may be provided for storing lists of telephone numbers. The list may be arranged by the user in order to provide a personalised or customised list. A cursor or marker may be provided that can be moved about the display using the handset. When the list is presented on the display, a particular number can be selected for dialling by marking it with the cursor or marker and then pressing an appropriate button on the handset to cause automatic dialling of the number. The directory may comprise a list of service providers that have advertised on the display.

10

15

Means may be provided for receiving and interpreting signals sent to the handset, in order to provide the names and numbers of incoming callers on the display, which are typically captured using a calling line identification (CLI) feature. Optionally, a voice message may be taken, and then played back. The number of the incoming caller may be annotated with a name and added to the list that can be presented on the display. Names may be highlighted on the list and dialled when selected from the TV screen.

20

Means may be provided for implementing an electronic program guide and/or another graphical user interface for presentation to the viewer, wherein the user interacts with the call management system through the graphical user interface.

25

The communication link between the handset and the display, and the means for presenting an offer of information from a service provider on the display screen may be provided via a control module that is separate from other components of the system or in a television or some other television accessory.

5

The handset is preferably wireless. Preferably, the handset has the functionality of a cordless telephone. Preferably, the handset is operable to control the functionality of the display and/or any other appliance that is connected thereto.

10

The telephone link may be established over the public switched network (PSTN). The handset may be operable to communicate with a base unit that is connected to the PSTN, preferably via a wireless communication link.

15

According to a yet further aspect of the invention, there is provided a telephone handset comprising an input for exchanging control and data signals with an external device and means for connecting the external device to a telephone network. An advantage of this is that it allows bi-directional communication between the external device and the telephone network via the handset, which in effect acts as a data conduit. Preferably, the handset is wireless. The handset may be adapted to function as a remote control for a television or a television accessory, such as a video recorder or a set top box. The external device may be a portable computer and the handset may be operable to act as a portable modem.

20

25

Various systems in which aspects of the invention are embodied will now be described by way of example only and with reference to the accompanying drawings, of which:



Figure 1 is diagrammatic representation of a first interactive telephone/television system;

Figure 2 is diagrammatic representation of a second interactive telephone/television system;

Figure 3 is a circuit diagram of a control module of the system of Figure 1;

Figure 4 is a front view of a handset;

Figure 5 is a view of the key layout of the handset of Figure 4;

Figure 6 is an example of an electronic program guide (EPG);

Figure 7 is an example of an EPG with a phonebook feature

Figure 8 is an example of a television screen on which is shown a broadcast program and additionally a caption indicating the name and number of an incoming telephone call, and

Figure 9 is an example of an EPG with advanced telephone features.

Figure 1 shows television system that includes a control module 10 that is connected to a television 12 via a SCART cable 14 and is able to communicate with the television 12 via both the SCART cable and a wireless communication link 15, typically an IR link. Also able to communicate with the control module 10 via a wireless link are a video recorder 16 and a remote handset 18.

Connected to the remote handset 18 via a wireless communication link, typically an IR or RF link, is a base unit 20 of a cordless telephone, which is in turn connected via a wireless link to a cordless telephone handset 22.

Communication between the remote handset 18 and the control module 10 is bi-

directional, as is communication between the handset 18 and the base unit 20, thereby allowing the provision of interactive services.

5 Figure 2 shows an arrangement that is similar to that of Figure 1, except in this case the control module 10 is provided in the television set 12, rather than being a discrete device. The control module 10 could, however, be provided in the VCR 16 or any other external device, such as a set top box. In any case, the control module 10 acts as the central controller of the overall system and the interaction between the module 10 and the remote handset 18 is the same.

10

The control module 10 of Figure 1 is connected to external devices, such as the TV 12, and input video devices, such as the VCR 16 or pay-TV decoder, via a SCART IN 24 socket, as shown in Figure 3. Video and sound are output from the control module 10 to the television 12 via a SCART OUT socket 26.

15

Broadcast data is received via the RF IN socket 28. In order to allow the module 10 to control the television 12, video recorder 16 or any other such device, an IR transceiver 30 is provided for sending and receiving commands from the remote handset 18. All commands and data from the remote handset 18 are received in an infra red data link protocol (such as IrDa).

20

Included in the control module 10 is a central processor 34 that stores and runs software for implementing an electronic program guide (EPG) and other graphical user interface (GUI) facilities, such as call management facilities for the user's telephone, for display on the television screen. Connected to the  
25 central processor 34 is a programmable tuner 36 that is operable to receive information for the EPG, which information is broadcast periodically, typically in the vertical blanking interval (VBI). Once received, the up-dated EPG data is

forwarded to the central processor 34 in order to ensure that information in the EPG presented to the user is up to date.

5 Connected to the programmable tuner 36 is a picture in picture or picture in guide circuit 38. When the electronic program guide is in use, the programmable tuner 36 can optionally be tuned to the channel to which the television 12 was tuned when the EPG was called up to the screen. The signal from the programmable tuner 36 is then passed through the picture in guide/picture circuit 38 and combined with the EPG graphics signal from the EPG on-screen-display generator (OSD) 38B via video switch 38A. In this way, a user can simultaneously view the EPG and the program that was previously being watched. As another option, the programmable tuner 36 and circuit 38 could be used to present a reduced size image of a currently broadcast program over a portion of a normal sized image of a different currently broadcast program.

15 In addition to providing control facilities for the television 12, the control module 10 also controls the video recorder 16. In order to facilitate unattended recording, a program delivery control (PDC) or VPS or WST decoder is connected to the central processor 34. This allows the system to monitor when a program is about to be broadcast, prepare the video recorder 16 and then switch it on when the program begins.

20 Included in the central processor 34 and associated non-volatile memory is computer software for controlling a universal remote control emulation process for converting command signals from the remote handset 18 via IR diode 30 and IR transceiver 32 to signals that are recognisable by each of the various

appliances. In this way, only a single remote control 18 is needed. This simplifies use of the system for the user.

5 The control module 10 is powered up 24 hours per day to support instant emulation of all television 12, video recorder 16 and set top box control commands received from the handset 18 and to allow detection of PDC and VPS labels.

10 In order to provide interactive functions, the control unit 10 and the handset 18 are operable to communicate with the base unit 20. This is typically a cordless telephone base, which is operable to establish a telephone link via the PSTN. As will be appreciated, the handset 18 is the interface for the user between both the control module 10 and the base unit 20.

15 The remote handset 18 has the functionality of a cordless telephone, in that telephone calls received at the base unit 20 are forwarded via a wireless connection to the handset 18. However, it additionally comprises an IR transceiver to allow two way communication with the control module 10. In summary, the handset 18 includes the following:

20     a. Telephone microphone and ear-piece;

          b. A character alphanumeric LCD display;

          c. Batteries;

          d. Bi-directional IrDA transceiver;

          e. Error corrected data transfer with control module at rates up to 38kbit/s;

25     f. DECT 1.9GHz data and telephone transceiver for data and voice communication with the base unit of the cordless telephone;

g. A key pad 44.

5 The keypad 44 is similar to a cordless telephone keypad, but the buttons 45 are mapped to allow easy control of the television 12, including EPG and teletext, and video recorder 16. Figures 4 and 5 show an example of the layout of the keypad 44, which has five rows of three buttons.

10 Provided in the top row is a MODE button 46 that toggles between control of different devices. Mode 1 sets the handset 18 to act as if it were a standard cordless telephone. Mode 2 allows the user to interface with the control module 10 and can activate electronic program guide facilities. Mode 3 allows the user to swap the television 12 between video and teletext modes of operation. Mode 4 allows control of the video recorder 16 from a pop-up, virtual keypad that is displayed on the television screen by the central processor 34. As will be  
15 appreciated, various other modes could be provided in order to allow the remote handset 18 to control other external devices.

Pressing the mode button causes the device name to toggle in the handset display. When the name of the desired device appears, the user is then able to  
20 select that device by, for example, clicking on an "ok" button. Once the desired mode is selected, control of the appliances connected to the control module 10, such as the television 12 or the video recorder 16 is via a virtual keypad that is generated by the central processor and displayed on the television screen. Provided in this virtual keypad is a cursor or marker that can be moved to the  
25 desired position on the virtual keypad using the CursorUp, CursorDown, CursorLeft and CursorRight buttons on the remote handset keypad 44. Once

the cursor is positioned at the required position, the function highlighted can be selected by pressing the button marked "OK".

5 When the functions or features selected by the viewer are interactive and  
require signals to be exchanged between the control unit 10 and the PSTN,  
logical commands are exchanged between the control unit 10 and the remote  
handset 18 across the IR link 15. In the remote handset 18, the same commands  
are converted/decoded to/from DTMF or analogue modem signals for exchange  
10 across the PSTN via base unit 20. It should be noted that in the case of a digital  
telephone network, the connection process (DTMF) would be replaced  
appropriately (however, for the European cordless DECT standard the  
modulation/demodulation process is maintained because the wireless  
connection between the base unit and the handset 18 must support the DECT  
15 gap (Generic Access Profile): the lowest capability a base unit 20 has to  
support, and which supports only voice and low bandwidth data).

As will be appreciated, the ability to communicate with an external device via  
the IR link 15, means that the handset 18 could be used to provide a link  
between a telephone or communication network, such as the PSTN, and other  
20 appliances, provided those appliances are fitted with compatible interfaces. For  
example the handset may act as a portable modem interface between a portable  
computer with an IR port and a telephone network. In this situation, the handset  
18 would be operable to receive control signals from the portable computer,  
generate and send suitable signals to the base unit 20 to connect to the PSTN,  
25 thereby establishing a link between the portable computer and the PSTN via the  
handset 18. Of course, for some applications the handset would have to include

an analogue modem for converting the signals received from the portable computer to a format that is suitable for receipt by the base unit 20.

5 In addition to sending signals to the base unit 20, the control module 10 is operable to receive and interpret signals sent therefrom. This is useful because the base unit 20 is able to provide the control module 10 with, for example, the numbers of incoming callers. This can be done if the base unit 20 supports a facility such as Calling Line Identification (CLI) where, when it is on-hook immediately prior to the ringing component of an incoming call, it decodes the  
10 PSTN Calling Line ID signal (such as, for example, specified by BT in the United Kingdom in specifications SIN227 and SIN242 or by ESTI in ETC 300 659-1 and ETS 300-778-1). The Calling Line ID is transmitted by the base unit 20 to the control module 10 and/or the remote handset 18, which are is able to display this information. Optionally, a voice message may be taken, and then  
15 played back (with the television sound muted) through either the television's 12 speakers or the remote handset's ear-piece. Each of these will be described in more detail later.

As previously mentioned, the control module 10 is arranged to implement an  
20 EPG 50, an example of which is shown in Figure 6. This has a grid with time 52 along the horizontal axis and channel 54 on the vertical axis. Program titles 56 are provided in cells 58 that are located within the grid so that a viewer can tell at a glance on which channel a program is to be broadcast and at what time.

25 Presented on the left hand side of the EPG in Figure 6 is an illustration of a "telephonic ad panel" 60 that is operable to allow a user to automatically set up

a direct telephone voice call to a predefined number downloaded with the ad-panel. When the telephonic panel 60 is selected by the user by pressing the arrow cursor keys 45 on remote handset 18, soft action keys are displayed at the top of EPG to give the user the option to make a voice call to a number  
5 specified (but not necessarily displayed) by the advertiser. Users may flag a logical interest response to an ad panel by selecting and pressing the corresponding soft action key (eg "OK" or colour buttons) on the remote handset 18. The telephone link is set up by sending a command signal from the control module 10, in response to a selection by the viewer, to the remote  
10 handset 18, over the IR link, where the relevant telephone number is dialled. A signal is then sent via the base unit 20 to connect the user's handset 18 to the PSTN or whichever telephone network is being used. The user is then able to communicate orally with the service provider using the remote handset 18. In the implementation considered, the above processes are determined by a  
15 software script (Java) that is embedded within the downloaded ad panel 60 data and executed by microcontroller 34.

To spread the load on customer call centres, call response ad-panels 60 can be controlled to appear at random during time window periods downloaded with  
20 the ad-panel. Instead of ad-panels, icons or cues could be presented to the user, either with the EPG or with a real time broadcast. As before, selection of the icons or cues automatically cause a telephonic link to be established between the user's handset 18 and the service provider.

25 In addition to providing a user interface for television accessory functions and ad-panels, the EPG implemented by processor 34 can be extended to provide a



call management system to allow the user to readily access and use common telco provided services, typically including:

- Caller display facilities, in which the number and name of the present caller is displayed on the screen, by for example matching the number of the caller against numbers associated with names stored in memory;
- Call return facilities, in which the number and name of the last caller is displayed;
- Call waiting facilities, in which a flag is displayed on the screen when a call is holding or someone is trying to call the user, and to enable/disable the service;
- Call diversion facilities, in which calls are diverted to an entry in a contact management function;
- Three way calling

In addition, the EPG may be adapted to present telephone directory information, such as yellow pages information or a personalised list of telephone numbers that can be arranged by the user.

In order to provide access to the call management system the EPG has a “telephone” option 60 that can be selected. Figure 7 shows an example of a page within the call management system of an EPG. In this, the “telephone” option 60 is highlighted, as indicated by the arrows 62. In addition, a further option “phonebook” 64 is selected. This causes a personalised list 66 of the user’s telephone contacts 68 to be displayed. The list 66 presented to the user includes the names of the telephone contacts, not the numbers. However, stored in memory are the appropriate telephone numbers associated with each entry of the list. Within this list 66, a cursor or marker is provided that can be moved

about the display using the remote handset 18. For example, in Figure 7, the cursor is positioned so as to highlight the name "Gunda Niemann".

5 When the list 66 is presented on the television screen, a particular number can be selected for dialling by marking it with the cursor or marker and then pressing an appropriate button on the handset 18. This action causes a command signal to be sent to the control module 10, which in turn generates a control signal that causes automatic dialling of the number. In this way, a telephone link can be established using the EPG call management system,  
10 without the user having to type in the desired telephone number.

As before control commands for the call management system are entered using the remote handset 18, which also acts as a data link interface between the control module 10 and the base unit 20 of the cordless telephone.

15 In addition to providing directory facilities, the call management system is operable to receive, store, playback and display details of incoming calls. When an incoming call is detected, a signal indicative of that is sent from the remote handset 18 to the control unit 10. Using the signal received, the  
20 processor 34 may be able to identify the number of the caller from the information received. In such cases, the processor then checks its internal memory to determine if the number of the incoming call is included in the user's personalised list 66. If it is, the caller's name is identified and both the name and number are presented on the screen of the user's television, as shown  
25 in Figure 8, simultaneously with the currently viewed television program. If the caller's name is not identified from the personalised list 66, only the number itself is shown on screen.

The control unit 10 is further adapted so that a user can manually press a button to capture the number of an incoming caller. If this is done, the telephone number is stored in memory. This number may then be annotated with a name and added to the user's personalised list 66, which can be displayed on the screen as and when desired. To annotate the number, the handset is adapted to recognise certain key strokes as being the entry of text. For example, alphabet characters may be entered by repeat presses to cycle to desired character and case (eg "m" by pressing "6" quickly twice, "M" by pressing "6" three times – in the sequence "6mMnNoO"). In addition, to entering the callers telephone number, the list may be annotated with the caller's address and other relevant details.

When text is displayed indicating that there is an incoming call, also shown are two icons 70 and 72, which indicate the button on the handset that should be pressed in order to either take the call 70 or alternatively record a message 72. If the user opts to take the call, the handset is switched into telephone mode and the user is able to converse with the caller. If the user opts to store the message, the caller is connected to a message recording facility and a message is recorded. Voice messages together with their Calling IDs (caller's telephone number) are received and stored within non-volatile memory in either the control module 10, remote handset 18, television 12 or base unit 20.

In order to allow the user to access recorded messages via the television screen, the EPG is adapted to include a "message" option 74, as shown in Figure 9. When this is selected, the EPG software in processor 34 generates a user scrollable list of bars 76 to denote telephone messages that have been received.

Each bar 76 corresponds to a received message, with its width denoting the message's duration. As before, where the caller's telephone number matches a name already stored using the user's personal phonebook, the displayed message is labelled with the caller's name. Otherwise the caller's telephone number is displayed, which number can be stored and annotated with a name and related information for inclusion in the phonebook previously mentioned.

In order to navigate around the message list, the user may move the cursor to a desired message bar and highlight that bar by pressing the arrow cursor keys 45 on the remote handset 18. When a name is highlighted in this way, information associated with the message 78 (eg time/date of message, caller's number) is displayed in a static information box. Also displayed is a "fuel gauge" showing total message time used and remaining. Various actions can then be initiated, eg delete and call-back, by pressing the appropriate action key displayed on the EPG in Figure 9.

Selection of the call back options causes the control unit 10 to send a signal to cause the handset 18 to dial the appropriate number.

While most EPG information is broadcast at specific times, users may want to receive immediate updates on certain types of information before the next scheduled broadcast. If such information is available it is highlighted with a different background. The update may then be effected by pressing an "update" key to initiate a data link via the remote handset between the control module and a remote server.

The control module 10 may contain a hypertext web browser and e-mail client software. In this way, e-mail can be sent from the TV via the base unit. In addition to supporting links to text, graphics and other objects, the control  
5 module may support "telephonic" hypertext links. Clicking on a telephonic link within a web page or e-mail causes the control module 10 to command the remote handset 18 to dial a telephone number. In the same way as for telephonic response ad-panels, clicking on a link initiates execution by microcontroller 34 of a downloaded software script that contains reference to  
10 the telephone number to be dialled.

In the specific system described above, command signals are sent from the control unit 10 to the handset 18, where a telephone number is dialled and an appropriate signal is sent to the base unit 20. It will be appreciated, however,  
15 that the control unit 10 could be adapted by, for example, including a DTMF dialler to generate and send signals directly to the base unit 20.

Whilst the system described with reference to Figures 1 and 2 has a video recorder and television connected to the control module, it will be appreciated  
20 that the module could equally be used to control many other appliances such as, for example, a satellite or cable decoder, a DVD player and any video time shift and display device.

Integration of television and video recorder remote control functions with a  
25 cordless telephone handset to form an integrated remote handset as described above allows a user to interact with an EPG and improves the functionality of the overall system. This is advantageous. In addition, integration of a

telephone handset into a remote control and the provision of an EPG as interface for the user provide a call management system that can be readily operated.

- 5 The embodiments above are described by way of example and are only to be considered preferred and illustrative of the inventive concepts disclosed. The scope of the invention is not to be restricted to the embodiments. Various and numerous other arrangements may be devised by one skilled in the art without departing from the spirit and scope of this invention.

**CLAIMS**

1. A system comprising a handset that is operable to establish an audio telephonic link, a display for displaying video signals and a controller operable to communicate with the handset, the display and the controller being separate from the handset, wherein the handset is operable to send a response signal to the controller in reply to a prompt on the display, which prompt is indicative of the availability of further information from a service provider, whereupon on receipt of the response signal, the controller is operable to transmit a control signal to automatically cause an audio telephonic link between the handset and the service provider to be established.
2. A system as claimed in claim 1. wherein the prompt is an advert or cue or icon, which is preferably part of an EPG display or presented simultaneously with a real time broadcast.
3. A system as claimed in claim 2. wherein the advert is presented as a panel in a portion of the EPG display.
4. A system as claimed in any one of the preceding claims, wherein the response signal is generated when a user flags a logical interest to such a prompt by selecting and pressing an appropriate soft action key on the handset, preferably "yes" or "ok".
5. A system as claimed in claims 3 or 4, wherein the ad panel is downloaded with the EPG data.

6. A system as claimed in any one of claims 3 to 5, wherein **updated ad panels or icons** are downloaded separately from the EPG.

5 7. A system as claimed in any one of claims 3 to 6, wherein **ad panels and/or cues and/or icons** are pre-loaded in a memory and **software is provided for causing the ad panels and/or cues and/or icons to be displayed at a particular time or downloaded to the user in a real time broadcast.**

10 8. A system as claimed in any one of claim 4 to 7, wherein **a telephone number is downloaded with the advert panel, which telephone number is dialled automatically when the controller sends the control signal to the handset.**

15 9. A system as claimed in any one of the preceding claims, wherein **the display is a screen of a television or computer or any other appliance.**

10. A system as claimed in any one of the preceding claims, wherein **the controller is a control module that is a discrete unit or provided in an appliance such as a television or some other television accessory or a PC.**

20 11. A system as claimed in claim 10, wherein **the control module includes a cradle that is connected to a power supply and is adapted to receive the handset, so that the handset can be re-charged.**

25 12. A system as claimed in any one of the preceding claims, wherein **the handset is a wireless handset.**

13. A system as claimed in any of the preceding claims, wherein **the handset**



is operable to control the functionality of the display and/or any other appliance that is connected thereto.

14. A system as claimed in any of claims 1 to 13, wherein the telephone link is established over the public switched network (PSTN).

15. A system as claimed in claim 14, wherein the handset may be in communication with a base unit that is connected to the PSTN, preferably wireless communication.

16. A system as claimed in claim 14 or claim 15, wherein the handset has the functionality of a cordless telephone.

17. An interactive call management system comprising a handset that is operable to establish an audio telephonic link, a display separate from the handset, a communication link between the handset and the display, and a graphical user interface (GUI) for presenting information relating to telephone services and/or callers on the display, wherein the handset has data entry keys or buttons for interactively entering requests for information on the screen.

18. A system as claimed in claim 17, wherein the display is the screen of a television or computer or any other appliance.

19. A system as claimed in claim 17 or claim 18, wherein the handset is adapted to control the television or other appliance.

20. A system as claimed in any one of claims 17 to 19, wherein the GUI is

adapted to present telephone directory information, such as Yellow Pages information.

5 21. A system as claimed in any one of claims 17 to 20, wherein a memory is provided for storing lists of telephone numbers or associated names.

22. A system as claimed in claim 21, wherein the list is arranged by the user in order to provide a personalised or customised list.

10 23. A system as claimed in claim 22, wherein a cursor or marker is provided that can be moved about the display using the handset.

15 24. A system as claimed in claim 22 or claim 23, wherein a particular number is selectable from the list for dialling by marking it with the cursor or marker and then pressing an appropriate key or button on the handset to cause automatic dialling of the number.

20 25. A system as claimed in any one of claims 20 to 24, wherein the directory comprises a list of service providers that have advertised on the display.

25 26. A system as claimed in any one of claim 17 to 25, wherein means are provided for receiving and interpreting incoming calls, in order to provide the names and numbers of incoming callers on the display, which are typically captured using a calling line identification (CLI) feature.

27. A system as claimed in any of claims 17 to 25 comprising a recorder for recording a voice message and playing back that message when desired.

28. A system as claimed in any one of claims 17 to 26, wherein the number of the incoming caller is annotated with a name and added to the list that is preferably presented on the display.

5

29. A system as claimed in claim 29, comprising a cursor or marker for highlighting a name on the list and dialling the appropriate number when the name is selected from the TV screen.

10

30. A system as claimed in any one of claims 17 to 30, wherein the graphical user interface is an electronic program guide.

15

31. A system as claimed in any one of claims 18 to 31, wherein the communication link between the handset and the display is provided via a controller that is separate from the handset.

32. A system as claimed in any of claim 17 to 31, wherein the handset is wireless.

20

33. A system as claimed in any one of claims 17 to 32, wherein the handset is operable to control the functionality of the display and/or any other appliance that is connected thereto.

25

34. A system as claimed in any one of claims 17 to 33, wherein the telephone link may be established over the public switched network (PSTN).

35. A system as claimed in claim 34, wherein the handset is in

communication with a base unit that is connected to the PSTN, preferably wireless communication.

5 36. A system as claimed in any one of claims 18 to 35, wherein the handset has the functionality of a cordless telephone.

10 37. A method comprising receiving at a controller a response signal from a telephone handset in reply to a prompt on a display, which prompt is indicative of the availability of further information from a service provider and transmitting a control signal from the controller to automatically cause an audio telephonic link between the handset and the service provider to be established.

15 38. A computer program on a readable medium comprising instructions for: interpreting a response signal received at a controller, which response signal is sent from a telephone handset in reply to a prompt on a display, which prompt is indicative of the availability of further information from a service provider, and

20 causing a control signal to be transmitted from the controller to automatically cause an audio telephonic link between the handset and the service provider to be established.

25 39. A telephone handset comprising an input for exchanging control signals and data from an external device and means for connecting the external device to a telephone network.

40. A telephone handset as claimed in claim 39, wherein the handset is wireless.

- 5
41. A telephone handset as claimed in claim 40 adapted to function as a remote control for a television or a television accessory or any other remotely controllable device, such as a video recorder or a set top box.
42. A telephone handset as claimed in any one of claims 39 to 41, wherein the external device is a portable computer and the handset is operable to act as a modem, preferably a portable modem.
- 10 43. A handset as claimed in claim 42, wherein the handset is re-chargable and, preferably adapted to be received in a re-charging cradle.
44. A handset as claimed in any of claims 39 to 43, wherein the telephone link is established over the public switched network (PSTN).
- 15 45. A handset as claimed in any one of claims 39 to 44 that is operable to communicate with a base unit that is connected to the PSTN.
- 20 46. A handset as claimed in any one of claim 39 to 45 that has the functionality of a cordless telephone.

1/7

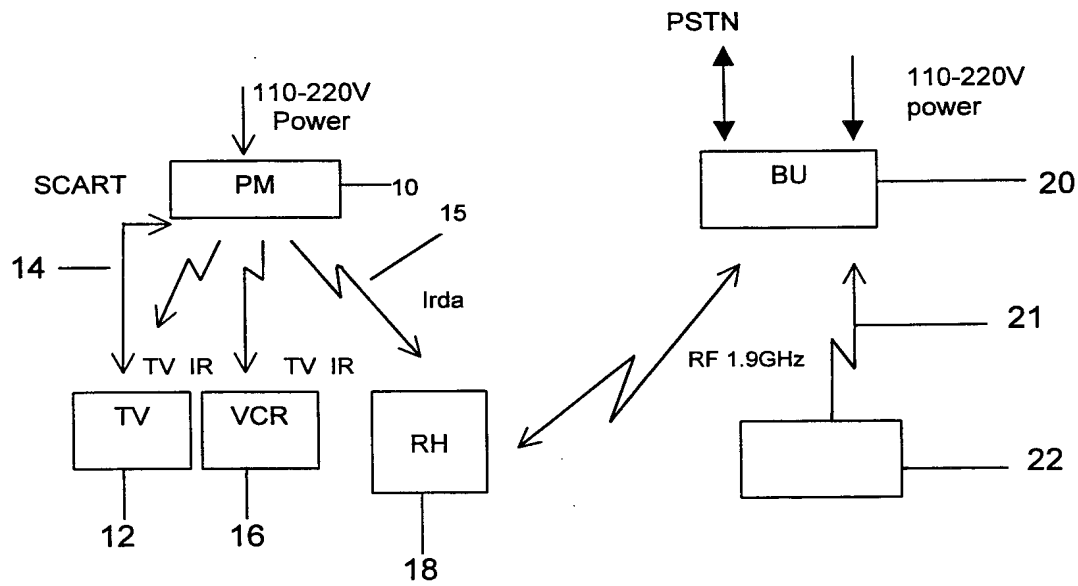


Figure 1

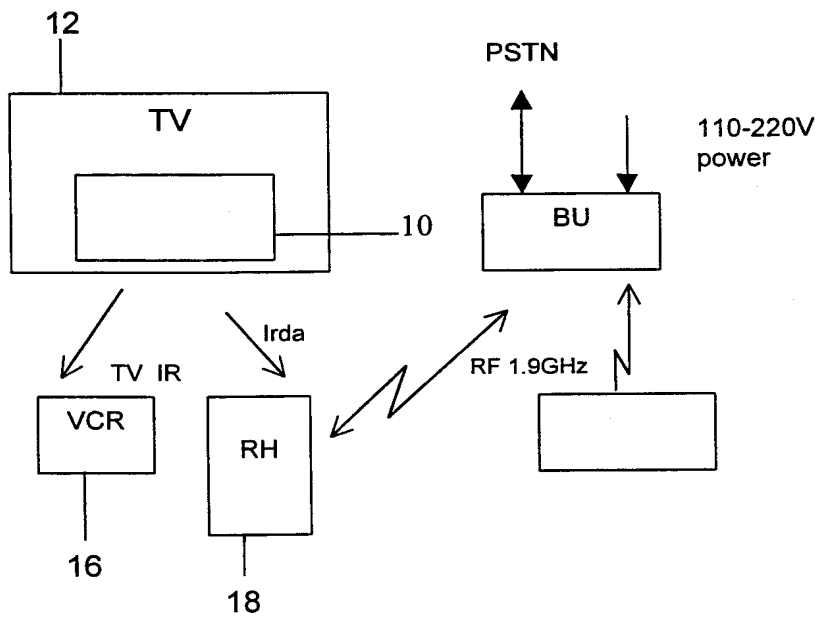


Figure 2

2/7

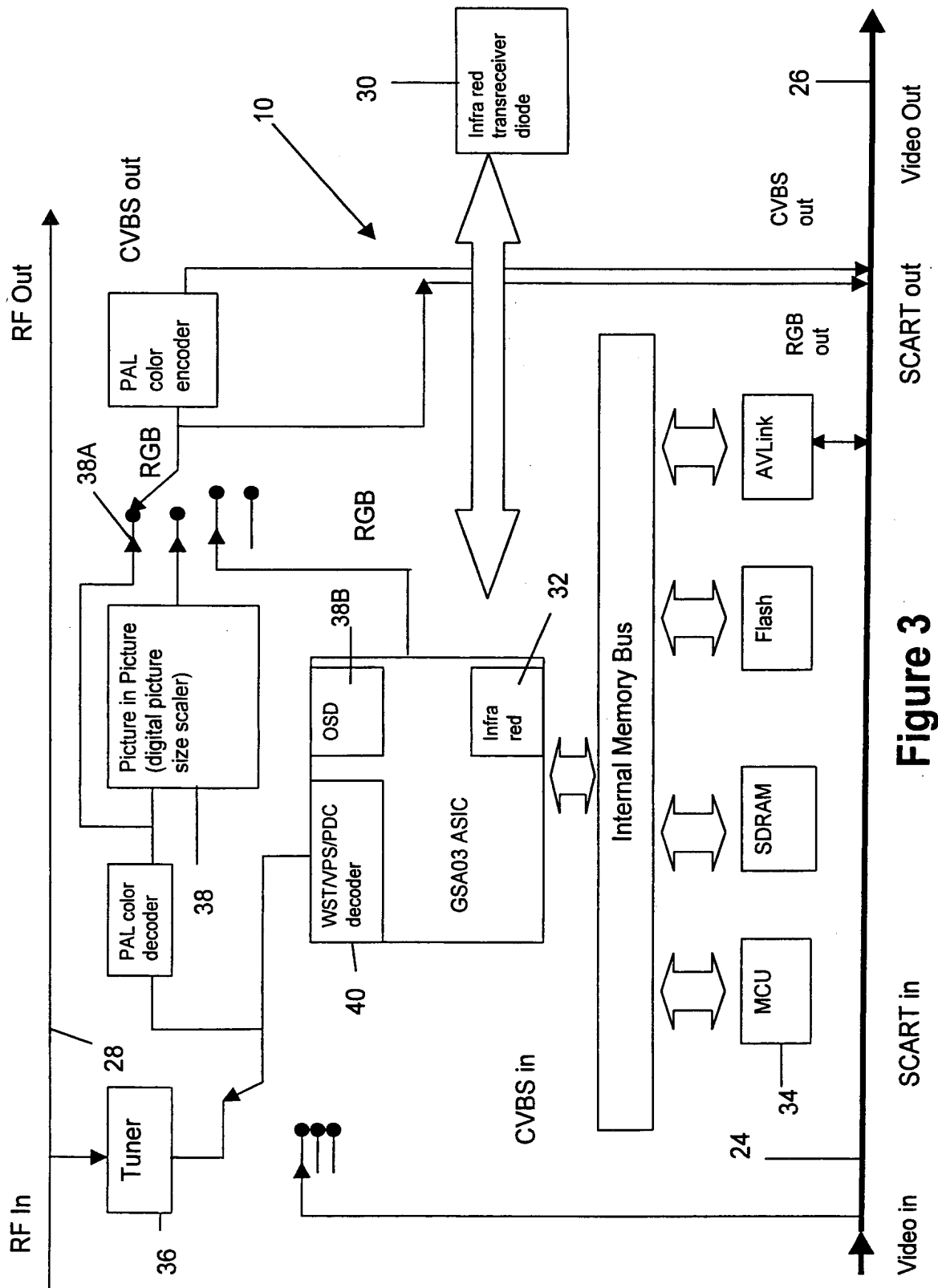


Figure 3

3/7

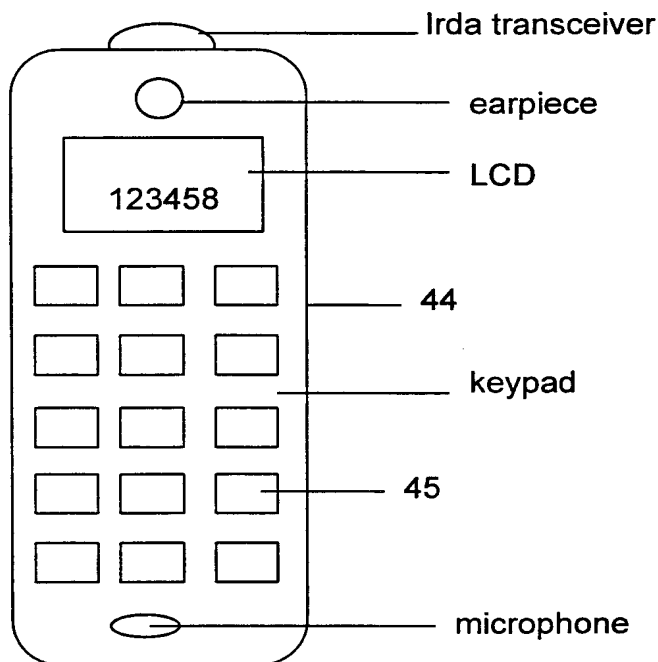


Figure 4

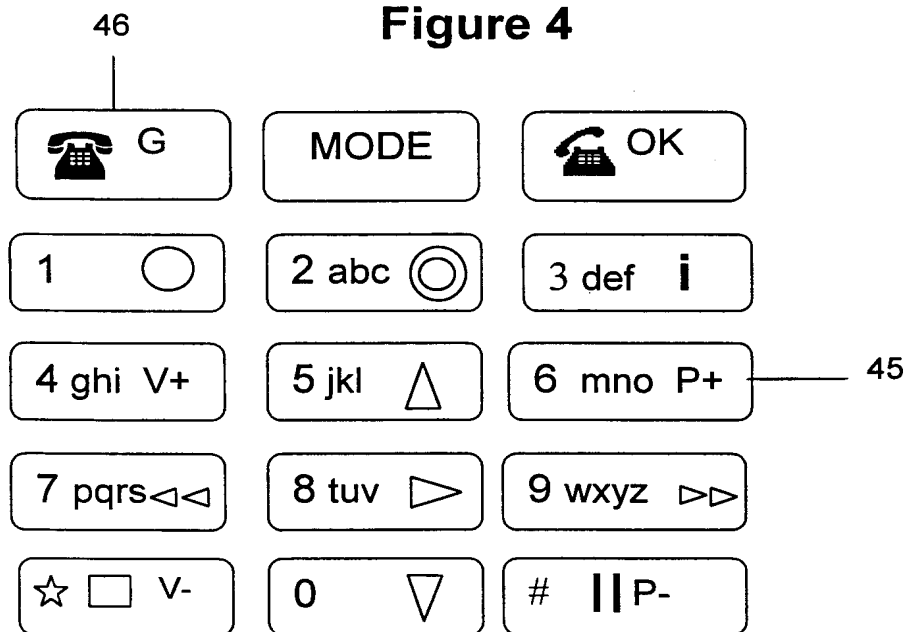


Figure 5



4/7

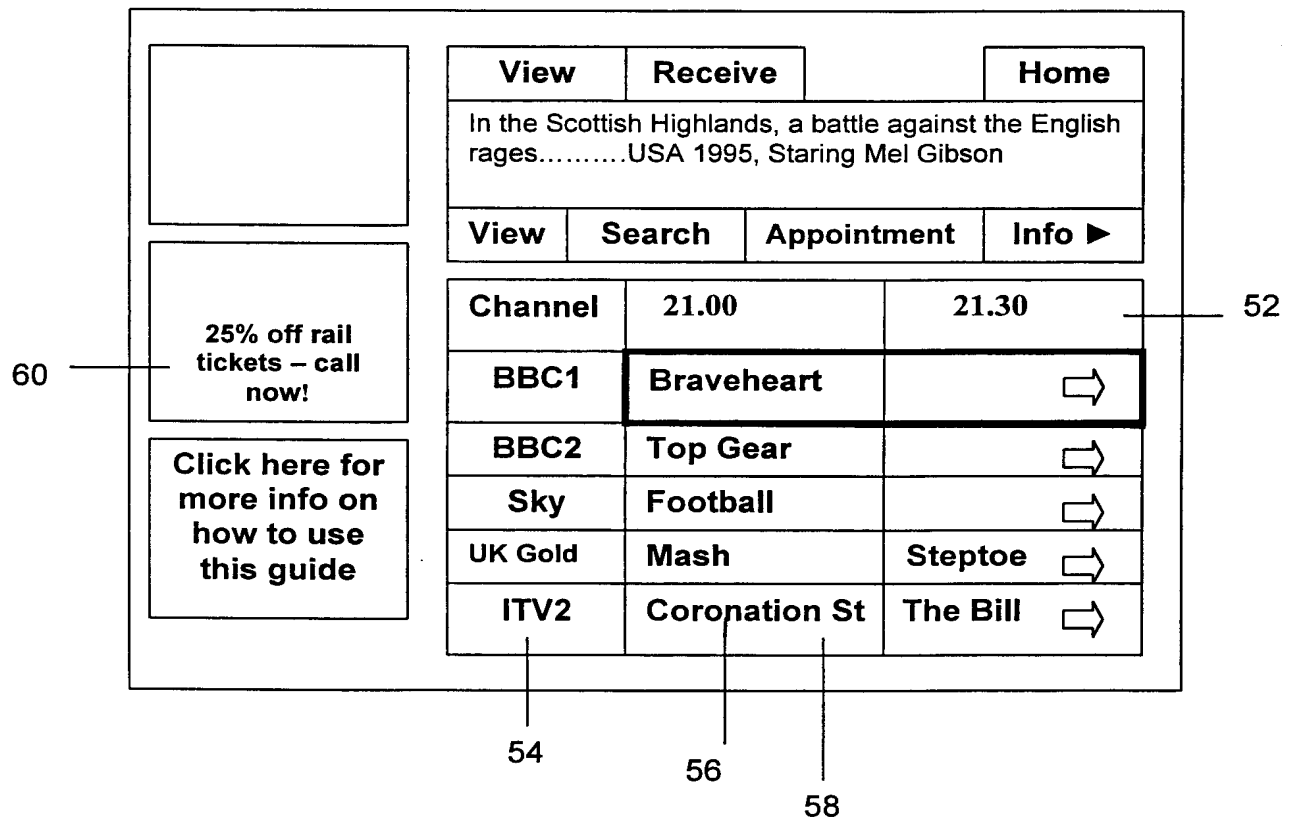


Figure 6

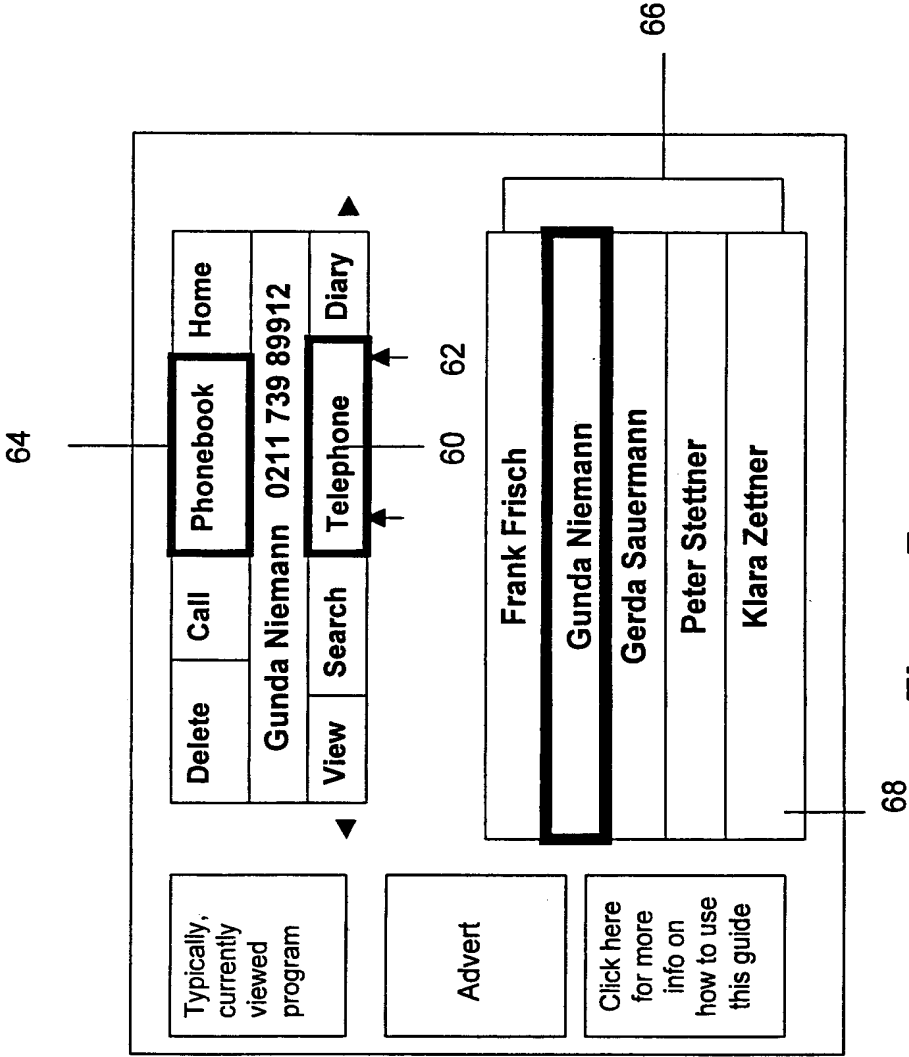


Figure 7

6/7

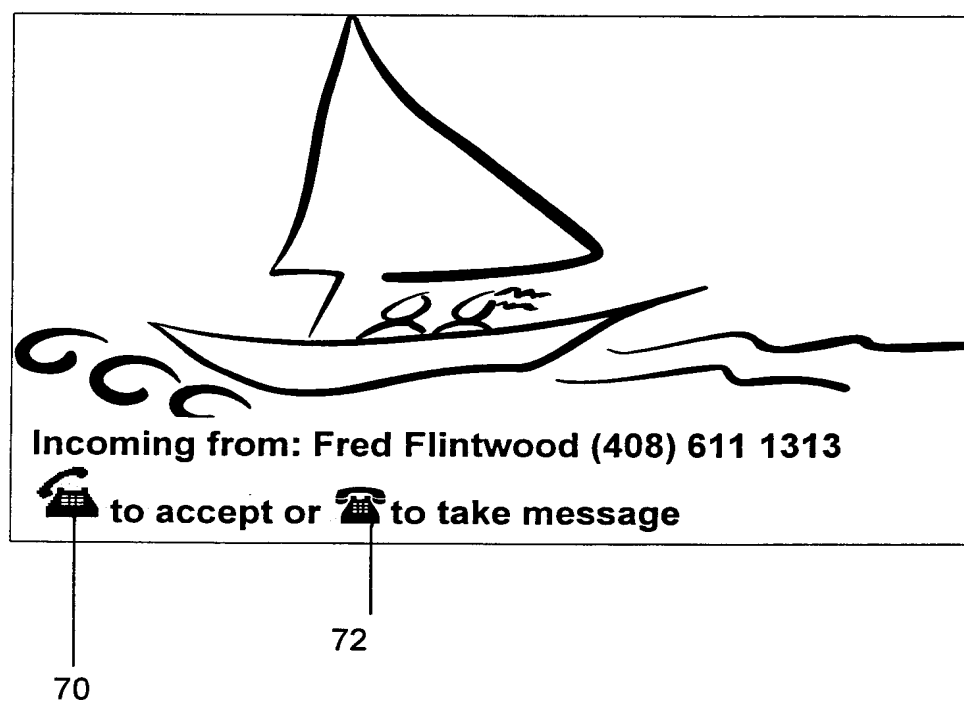
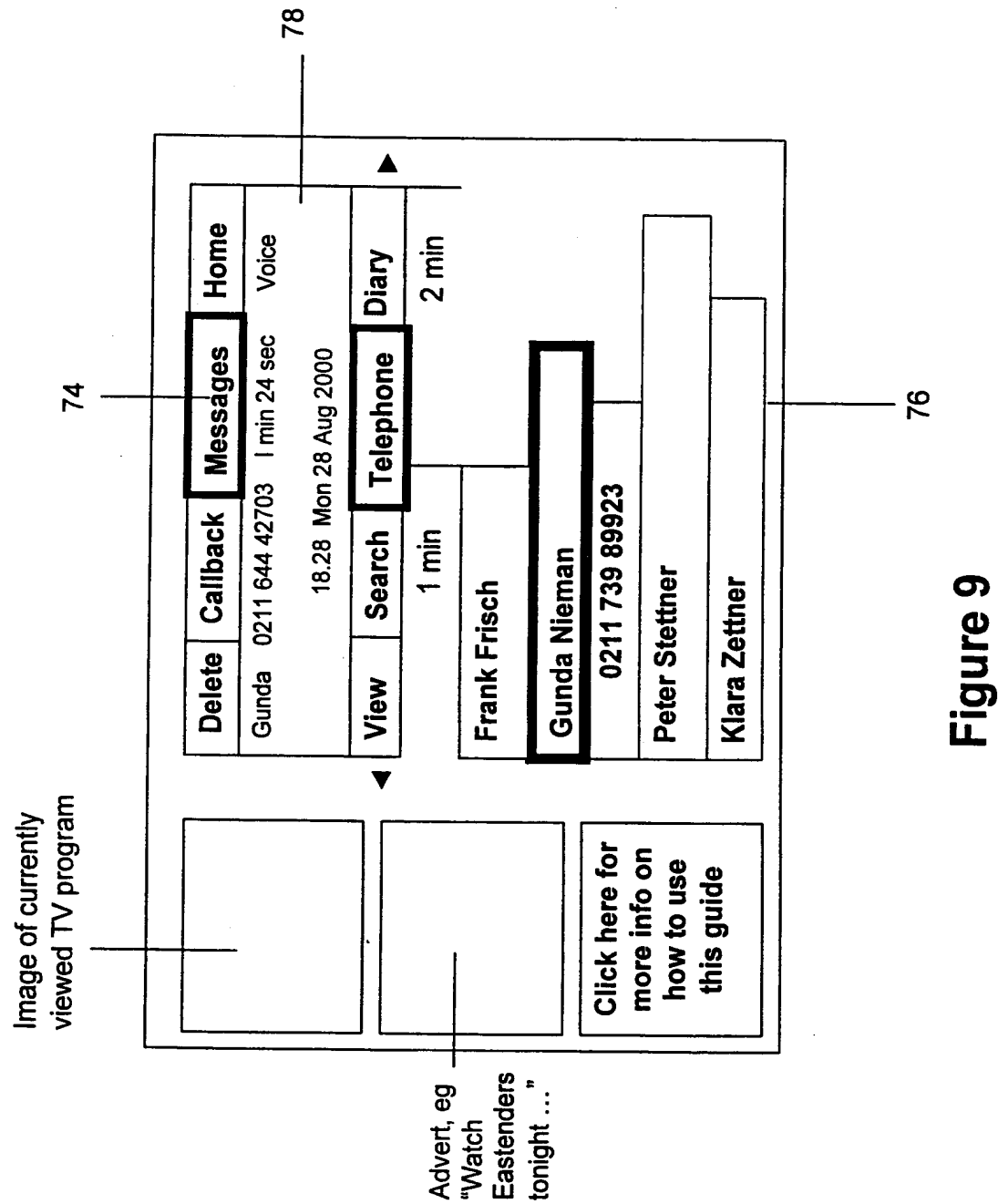


Figure 8



## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/03323

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04N7/173

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	<p>EP 0 741 495 A (SONY CORP) 6 November 1996 (1996-11-06)</p> <p>page 5, column 8, line 6 -page 6, column 10, line 38 page 7, column 12, line 26 - line 39 page 9, column 16, line 25 -page 12, column 22, line 13 page 14, column 26, line 1 -page 18, column 34, line 41 figures 3,9-19,25-34</p> <p>--- -/--</p>	<p>1-20, 30-46 21-25</p>

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents :

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&amp;\* document member of the same patent family

Date of the actual completion of the international search

9 February 2001

Date of mailing of the international search report

15/02/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Van der Zaai, R

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/03323

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>WO 97 31480 A (GUIDE INC E ;YUEN HENRY C (US)) 28 August 1997 (1997-08-28)  cited in the application  page 1, line 11 - line 27  page 4, line 18 -page 6, line 8  page 7, line 29 -page 9, line 18  page 14, line 8 -page 17, line 10  figures 1-9</p> <p>----</p>	1-46
A	<p>WO 96 13933 A (GEMSTAR DEV CORP)  9 May 1996 (1996-05-09)  cited in the application  page 17, line 21 -page 19, line 6  figures 13-17</p> <p>-----</p>	1,11-17, 32-46

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/03323

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0741495	A	06-11-1996	JP 8307728 A	22-11-1996
WO 9731480	A	28-08-1997	AU 2191197 A	10-09-1997
			CA 2247395 A	28-08-1997
			CN 1214838 A	21-04-1999
			EP 0883962 A	16-12-1998
			JP 2000505616 T	09-05-2000
			US 5898919 A	27-04-1999
WO 9613933	A	09-05-1996	AU 4141296 A	23-05-1996